

REMARKS

In response to the Office action identified above, please accept the following remarks.

5

Examiner:

1. Claims 1-4, 6, 7, 9-11, and 14-19 are rejected under 35 U.S.C. §102(e) as being anticipated by Ishimura et al. (United States Patent 6,329,700, hereafter Ishimura).

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With respect to independent claim 1, Ishimura discloses scribe lines for increasing a utilizable area on a wafer, the wafer comprising a plurality of dies, the scribe lines comprising (see the entire patent, including Fig. 2, for example): at least a first scribe line DXb arranged in a first direction in a first gap of the dies CR1, the first scribe line DXb having a first width Lb; and at least a second scribe line DXa arranged in the first direction in a second gap of the dies, the second scribe line DXa having a second width La narrower than the first width.

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Claim 1 is thus rejected under 35 U.S.C. §102(e) as being anticipated by Ishimura.

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With respect to dependent claim 2, Ishimura's first scribe line DXb comprises at least an alignment mark SM1 for aligning elements on different dies.

Claim 2 is thus rejected under 35 U.S.C. §102(e) as being anticipated by Ishimura.

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With respect to dependent claim 3, Ishimura's first scribe line DXb comprises at least a test key TP for performing a quality test on the dies.

Claim 3 is thus rejected under 35 U.S.C. §102(e) as being anticipated by Ishimura.

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With respect to dependent claim 4, Ishimura's first width Lb is approximately between 100 and 500 micrometers (see column 5,

lines 10-13, for example).

Claim 4 is thus rejected under 35 U.S.C. §102(e) as being anticipated by Ishimura.

5 With respect to dependent claim 6, Ishimura's second scribe line DXa is provided for dicing the wafer (see the Abstract, for example).

Claim 6 is thus rejected under 35 U.S.C. §102(e) as being anticipated by Ishimura.

10 With respect to dependent claim 7, Ishimura's wafer is scribed by supplying a mechanical stress on the scribe lines (see column 4, lines 61-64, for example).

Claim 7 is thus rejected under 35 U.S.C. §102(e) as being anticipated by Ishimura.

15 With respect to dependent claim 9, Ishimura's wafer further comprises a plurality of scribe lines DYa and DYb arranged in a second direction, the scribe lines arranged in the second direction and comprising various scribe line widths La and Lb.

Claim 9 is thus rejected under 35 U.S.C. §102(e) as being anticipated by Ishimura.

20 With respect to dependent claim 10, Ishimura's second direction is perpendicular to the first direction.

Claim 10 is thus rejected under 35 U.S.C. §102(e) as being anticipated by Ishimura.

25 With respect to dependent claim 11, Ishimura's dies CR1 are in the same shapes and sizes.

Claim 11 is thus rejected under 35 U.S.C. §102(e) as being anticipated by Ishimura.

30 With respect to independent claim 14, Ishimura discloses scribe lines on a wafer, the wafer comprising a plurality of dies, the scribe lines comprising (see the entire patent, including Fig. 2, for example): a plurality of first scribe lines DXb positioned in gaps of the dies, each of the first scribe lines comprising a predetermined

pattern; and a plurality of second scribe lines DXa positioned in gaps of the dies, the second scribe lines being narrower than the first scribe lines.

5 Claim 14 is thus rejected under 35 U.S.C. §102(e) as being anticipated by Ishimura.

With respect to dependent claim 15, Ishimura's predetermined pattern DXb comprises an alignment mark SM1 for aligning elements on different dies.

10 Claim 15 is thus rejected under 35 U.S.C. §102(e) as being anticipated by Ishimura.

With respect to dependent claim 16, Ishimura's predetermined pattern DXb comprises a test key TP for performing a quality test on the dies.

15 Claim 16 is thus rejected under 35 U.S.C. §102(e) as being anticipated by Ishimura.

With respect to dependent claim 17, Ishimura's first scribe lines DXb comprise at least an arranging direction.

Claim 17 is thus rejected under 35 U.S.C. §102(e) as being anticipated by Ishimura.

20 With respect to dependent claim 18, Ishimura's second scribe lines DXa comprise at least an arranging direction.

Claim 18 is thus rejected under 35 U.S.C. §102(e) as being anticipated by Ishimura.

25 With respect to dependent claim 19, Ishimura's dies CR1 are in the same shapes and sizes.

Claim 19 is thus rejected under 35 U.S.C. §102(e) as being anticipated by Ishimura.

Response:

30 Claim 1 is amended by merging with its dependent claim 12 to include a limitation of the shapes of the dies. No new matter is introduced. Since claim 12 is objected to as being dependent on a

rejected base claim and would be allowable over the prior art of record if amended to further include all the limitations of independent claim 1, allowance of the amended claim 1 is hereby requested.

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As claims 2-4, 6, 7, and 9-11 are dependent upon the amended claim 1, they should be allowed if the amended claim 1 is allowed. Reconsideration of claims 2-4, 6, 7, and 9-11 is therefore requested.

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Claim 14 is amended by merging with its dependent claim 21 to include a limitation of the sizes of the dies. No new matter is introduced. Since claim 21 is objected to as being dependent on a rejected base claim and would be allowable over the prior art of record if amended to further include all the limitations of independent claim 14, allowance of the amended claim 14 is hereby requested.

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As claims 15-19 are dependent upon the amended claim 14, they should be allowed if the amended claim 14 is allowed. Reconsideration of claims 15-19 is therefore requested.

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Examiner:

2. Claim 8 is rejected under 35 U.S.C. §103(a) as being unpatentable over Ishimura et al. (United States Patent 6,329,700 – hereafter Ishimura) together with Yung et al. (United States Patent 6,075,280 – hereafter Yung).

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The difference between Ishimura's scribe lines (see the rejection of independent claim 1 above) and dependent claim 8's scribe lines is they are sawed and etched, respectively.

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Yung teaches it is advantageous to etch scribe lines rather than saw them (see the entire patent).

It would have been obvious to one skilled in this art to advantageously etch Ishimura's scribe lines rather than saw them, as per Yung's teaching.

5 Claim 8 is thus rejected under 35 U.S.C. §103(a) as being unpatentable over Ishimura together with Yung.

Response:

10 As claim 8 is dependent upon the amended claim 1, it should be allowed if the amended claim 1 is allowed. Reconsideration of claim 8 is therefore requested.

Examiner:

15 3. Claim 5 is objected to as being dependent on a rejected base claim (i.e., claim 5 would be allowable over the prior art of record if amended to further include all the limitations of independent claim 1).

Response:

20 As claim 5 is dependent upon the amended claim 1, it should be allowed if the amended claim 1 is allowed. Reconsideration of claim 5 is therefore requested.

Examiner:

25 4. Claim 12 is objected to as being dependent on a rejected base claim (i.e., claim 12 would be allowable over the prior art of record if amended to further include all the limitations of independent claim 1).

Response:

30 Claim 12 has been merged into the amended claim 1 and is therefore canceled.

Examiner:

5 5. Claim 13 is objected to as being dependent on a rejected
base claim (i.e., claim 13 would be allowable over the prior art of
record if amended to further include all the limitations of
independent claim 1).

Response:

10 As claim 13 is dependent upon the amended claim 1, it should
be allowed if the amended claim 1 is allowed. Reconsideration of
claim 13 is therefore requested.

Examiner:

15 6. Claim 20 is objected to as being dependent on a rejected
base claim (i.e., claim 20 would be allowable over the prior art of
record if amended to further include all the limitations of
independent claim 1).

Response:

20 As claim 20 is dependent upon the amended claim 14, it should
be allowed if the amended claim 14 is allowed. Reconsideration of
claim 20 is therefore requested.

Examiner:

25 7. Claim 21 is objected to as being dependent on a rejected
base claim (i.e., claim 21 would be allowable over the prior art of
record if amended to further include all the limitations of
independent claim 1).

Response:

30 Claim 21 has been merged into the amended claim 14 and is
therefore canceled.

Introduction to the new claims 22-30:

5 The new claim 22 includes all the limitations of the original claim 1 and the characteristic that the widths of the scribe lines depend on the measurement sizes therein as disclosed in the paragraph [0016] at page 3 of the specification of the present application. No new matter is introduced.

10 Referring to column 4, lines 29-38 of Ishimura's disclosure, the scribe lines are divided into two groups DXa and DXb according to the scribe line widths. The scribe lines DXb have a wider width L_b to contain the patterns of alignment marks and TEG pattern. The scribe lines DXa have a minimum width required for dicing the wafer. Ishimura never teaches that the scribe lines DXb can have
15 different widths according to their containing pattern sizes.

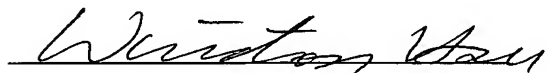
20 However, as shown in Fig. 2 and the paragraph [0016] of the present application, the widths W_{x2} , W_{x3} and W_{x4} have been taught to have an identical value or have a unique value depending on the measurement device sizes in each scribe line. A method of providing a probe test on the wafer having three different scribe
25 line widths is also shown in Fig. 3B and the paragraph [0019] at pages 4-5 of the specification of the present application. Therefore, the scribe lines of the present application has the advantage that the width of each scribe line is determined according
30 to the contents in the scribe line to more effectively increase wafer utilizable area.

30 Due to the above, the new claim 22 is believed to be substantially different from the prior art of record. Allowance of the new claim 22 is hereby requested.

The new claims 23-26 are based on the original claims 2 and 3.
The new claim 27 is based on the original claim 6. The new claims
28-30 are based on the original claims 11-13. No new matter is
introduced. The new claims 23-30 are dependent on the new claim
5 22 and should be allowed if the new claim 22 is allowed. Allowance
of the new claims 23-30 is hereby requested.

Sincerely yours,

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